***DATA STUCTURES AND ALGORITHM***

***LAB-2***

*Object: Code a menu based program of Linear Search and Binary Search as given below:*

1. *Linear Search*
2. Binary Search
3. Exit

*Code:*

**#include<iostream>**

**#include<conio.h>**

**using namespace std;**

**void main()**

**{**

**start:**

**int choice;**

**int linear=0;**

**cout<<"Welcome To Linear Search and Binary Search";**

**cout<<"\nSelect the Searching Algorithm";**

**cout<<"\n1. Linear Search \n2. Binary Search \n3. Exit";**

**cout<<"\nEnter your choice: ";**

**cin>>choice;**

**system("cls");**

**switch (choice)**

**{**

**case 1:**

**cout<<"Linear Search"<<endl;**

**int arr[10],s,i;**

**cout<<"\nEnter elements of the Array\n";**

**for(i=0;i<10;i++)**

**cin>>arr[i];**

**cout<<"\nEnter element to search: ";**

**cin>>s;**

**for(i=0;i<10;i++)**

**{**

**if(arr[i]==s)**

**{**

**linear=1;**

**break;**

**}**

**}**

**if(linear==1)**

**cout<<s<<" is found at position "<<i<<endl<<endl;**

**else**

**cout<<"\nElement not found"<<endl<<endl;**

**break;**

**case 2:**

**cout<<"Binary Search"<<endl<<endl;**

**int loop, Array[10], search, first\_num, last\_num, middle\_num;**

**cout<<"\nEnter elements of the Array\n";**

**for (loop=0; loop<10; loop++)**

**{**

**cin>>Array[loop];**

**}**

**cout<<"\nEnter element to search: ";**

**cin>>search;**

**first\_num = 0;**

**last\_num = 10-1;**

**middle\_num = (first\_num+last\_num)/2;**

**while (first\_num <= last\_num)**

**{**

**if(Array[middle\_num] < search)**

**{**

**first\_num = middle\_num + 1;**

**}**

**else if(Array[middle\_num] == search)**

**{**

**cout<<search<<" is found at position "<<middle\_num<<endl;**

**break;**

**}**

**else**

**{**

**last\_num = middle\_num - 1;**

**}**

**middle\_num = (first\_num + last\_num)/2;**

**}**

**if(first\_num > last\_num)**

**{**

**cout<<"Element not found"<<endl;**

**}**

**break;**

**case 3:**

**exit(0);**

**break;**

**default:**

**cout<<"Invalid Input"<<endl<<endl;**

**break;**

**}**

**goto start;**

**getch();**

**}**

*Output:*





